

The Literature

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PHACOEMULSIFICATION AND INTRAOCULAR LENS IMPLANTATION BEFORE, DURING, OR AFTER CANALOPLASTY IN EYES WITH OPEN-ANGLE GLAUCOMA: 3-YEAR RESULTS

Tetz M, Koerber N, Shingleton BJ, et al¹

ABSTRACT SUMMARY

This study was an international, retrospective subset analysis of 133 adult patients with open-angle glaucoma who underwent canaloplasty with tensioning suture placement. All patients had a baseline IOP of 16 mm Hg or higher within the past 60 days, a historical maximum IOP of 21 mm Hg or greater, and documented visual field loss. In addition, they all met each surgeon's individual criteria for failure to respond adequately to maximally tolerated medical or laser therapy. Eighty-two phakic eyes underwent canaloplasty alone; 51 eyes received canaloplasty during or after cataract surgery and were then monitored for 3 years. The patients were organized into three groups:

1. phakic eyes that underwent canaloplasty
2. pseudophakic eyes that underwent canaloplasty
3. eyes that underwent combined phacoemulsification cataract extraction and canaloplasty

The average preoperative IOP values were 23.4 ± 4.3 , 23.9 ± 5.2 , and 23.5 ± 5.2 mm Hg in groups 1, 2, and 3, respectively.

Three years postoperatively, the mean IOP values were 15.5 ± 3.5 , 15.6 ± 3.5 , and 13.6 ± 3.6 mm Hg in groups 1, 2, and 3, respectively. Patients in group 3 had statistically significantly lower medication use ($P < .001$) than the other two groups after 3 years of follow-up, with the majority of patients in group 3 stopping topical glaucoma medication altogether. In addition, the overall failure rate in group 3 was lower compared with groups 1 and 2. There was no significant difference in mean visual acuity results at any study interval between the groups.

DISCUSSION

When is the best time to perform canaloplasty?

This study suggests that canaloplasty can be effectively performed irrespective of lens status, with the greatest IOP reduction achieved when the procedure is combined with cataract surgery. The improved outcome in

phacocanaloplasty cases may be a result of the cataract surgery itself, however, which is known to decrease IOP.²

Given these findings, the investigators concluded that canaloplasty may be performed alone or combined with cataract surgery without greatly affecting the outcome. A limitation of the study is that most enrolled patients were white. It is therefore difficult to generalize these findings to all racial groups.

How does canaloplasty compare to trabeculectomy?

Cataracts and glaucoma are often coexistent diseases and, therefore, frequently must be addressed together. Although this study did not provide a direct head-to-head comparison, it demonstrated that phacocanaloplasty can achieve a comparable reduction in IOP to phacotrabeculectomy.^{3,4}

Prior literature has demonstrated that phacoemulsification cataract surgery after trabeculectomy can produce a long-term increase in IOP.⁵ Conversely, the results from this study demonstrate that canaloplasty can be effectively performed during or after cataract surgery. In addition, a subgroup analysis of the data revealed that cataract surgery performed after canaloplasty not only maintained the IOP reduction of canaloplasty but also modestly enhanced the decrease in IOP. This article therefore suggests that cataract surgery does not need to be carefully timed in relation to canaloplasty, unlike with trabeculectomy. In this study, canaloplasty also had a better safety profile than trabeculectomy, with very low incidences of hypotony and hyphema and no concern about bleb leaks or late infections. The study did not stratify patients by glaucoma stage, however, so there may still be a role for trabeculectomy or tube shunt procedures in more advanced cases when a lower IOP is targeted.

NEEDLE BLEB REVISION WITH BEVACIZUMAB AND MITOMYCIN C COMPARED WITH MITOMYCIN C ALONE FOR FAILING FILTRATION BLEBS

Tai TYT, Moser MR, Pro MJ, et al⁶

ABSTRACT SUMMARY

This prospective, randomized, controlled trial compared needle revision with mitomycin C (MMC) alone

versus MMC plus bevacizumab in eyes with a failing trabeculectomy and Ex-Press Glaucoma Filtration Device (Alcon) blebs. Fifty-eight patients were enrolled and randomized to either subconjunctival MMC and balanced salt solution (control group) or subconjunctival MMC and bevacizumab (treatment group). Six months after needling, 57% of patients in the treatment group experienced a reduction in IOP of at least 20% without IOP-lowering medication versus 41% of patients in the control group. An additional 7% of patients in the control group reached qualified success, defined as an IOP reduction of 20% or more with IOP-lowering medication. Overall, there was no statistically significant difference in the success rate between the two groups ($P = .35$).

Six months postoperatively, the average IOP in the treatment and control groups was 11.52 and 12.83 mm Hg, respectively ($P = .45$). After treatment with bevacizumab in addition to MMC, however, patients were using fewer medications (average, 0.16) compared to the control group (average, 0.58; $P = .058$). In addition, the blebs in the treatment arm were significantly less vascular ($P < .05$) and had a greater extent ($P = .022$). Four patients in the treatment arm and three patients in the control group received further surgical intervention for IOP lowering by 6 months after bleb needling. There were slightly more complications in the treatment arm, but none involved a permanent loss of more than 2 lines on the Snellen chart or required surgical intervention.

DISCUSSION

How can bevacizumab help a failing bleb?

Both the Indiana Bleb Appearance Grading Scale and the Moorfields Bleb Grading System include ratings of the bleb's height, extent, and vascularity.⁷ Prior research has also demonstrated that blebs with a greater extent and less vascularity are more likely to successfully lower the IOP.⁸ This study showed that treatment with bevacizumab can lead to significantly less vascularity and a greater extent for failing blebs. Although this study did not demonstrate a statistically significant improvement in terms of reducing bleb failure, when bevacizumab was used as an adjunct to MMC, there was a trend towards reducing failure and achieving a lower mean IOP.

What are the implications of this study?

Overall, this study showed no statistically significant difference when bevacizumab was administered in addition to MMC for failing blebs, but there may be a future role for antivascular endothelial growth factor inhibitors for managing failing blebs. The results reveal a trend towards a reduced failure rate, less medication use,

and improved bleb profile in the patients treated with bevacizumab with no serious adverse events. In addition, the treatment group was significantly younger than the control arm ($P = .020$). Given that younger patients are known to have a more robust healing response, the results in the treatment arm may have been dampened by a stronger scarring effect.

This study only included one needling procedure for failed blebs, and both needling procedures and bevacizumab may be more efficacious with repeat administration. In addition, higher concentrations of this medication may still be safe yet more effective in saving failing blebs. A variety of antivascular endothelial growth factor agents are now available with different molecular weights and pharmacokinetic properties that may prove to be more effective for salvaging failing filtering blebs.⁹ As of now, bevacizumab is still in an investigatory phase for failing blebs, and further research on this agent along with related drugs is needed to determine if they have a therapeutic role for failing blebs. ■

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